

Gender differences in academic motivation of secondary school students

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Abstract

Introduction. The following study examines gender differences existing in various cognitive-motivational variables (causal attributions, academic goals, academic self-concept and use of significant learning strategies) and in performance attained in school subjects of Language Arts and Mathematics.

Method. For this purpose, a sample of 521 students were selected from the second cycle of mandatory secondary education [*N.T. 9th and 10th grades*]. The following questionnaires were used: AFA, MAPE-II, EMA-II and LASSI.

Results. Results show the existence of gender difference in variables under consideration, with girls showing lower levels of extrinsic motivation, taking more responsibility for their failures, using information processing strategies more extensively, and getting better marks in Language Arts. Gender differences were not found in academic self-concept, in intrinsic motivation, in success-related attributions and in performance attained in Mathematics.

Discussion: Results suggest that differences exist in the cognitive-motivational functioning of boys and girls in the academic environment, with the girls have a more adaptive approach to learning tasks. However, the influence of contextual variables that may differently affect boys' and girls' motivation was not taken into account. Thus future research should address the influence of such factors.

Keywords: Academic motivation, secondary school students, cognitive-motivational variables, gender.

Introduction

One of the reasons it is important to analyze academic motivation is because of its significant influence on learning at school. As a consequence, learning and motivation are two variables for joint analysis. Though for some years research on school learning has centered its attention in the cognitive trend, we currently find, coming from different perspectives, a generalized emphasis on the necessary interrelation between the cognitive and the motivational (Pintrich & De Groot, 1990; Pintrich, 2000). In fact, one of the proposals that best encompasses the complexity of motivational processes at the academic level comes from Pintrich and De Groot (1990), where they distinguish three general categories of relevant constructs for motivation in educational contexts: an *expectation component*, including students' beliefs about their ability to complete a task; a *value component*, including students' goals and beliefs about the task's importance and interest, and an *affective component*, including affective-emotional consequences derived from completing a task, as well as the results of success or failure at an academic level. All these motivational beliefs have been related to self-regulated learning. Thus, various research papers claim that students adopting an intrinsic motivational orientation use cognitive strategies and self-regulating processes to a greater degree than students who adopt an extrinsic motivational orientation (Anderman & Young, 1994; Pintrich & De Groot 1990(confirmar el mismo cambio en castellano); Miller, Behrens, Greene & Newman, 1993; Valle, González, Núñez, Rodríguez & Piñeiro, 2001). We have also seen that a deep approach to learning is associated with a high degree of involvement and intrinsic interest toward learning, in those cases where results are consistently attributed to internal causes (ability and effort), while assuming that results are due to external causes like luck influences positively toward adopting a superficial learning approach (Valle, González, Gómez, Vieiro, Cuevas & González, 1997).

As for self-concept, it is one of the most important variables within the motivational environment, not only because of the influence it can have on the student's attributional behavior, but because of its influence on activation of several cognitive strategies and of self-regulation of school learning (González-Pienda & Núñez, 1997).

Current research claims that subjects' active involvement in the learning process increases when they trust their own abilities and have high self-efficacy expectations, they value the tasks and feel responsible for the learning objectives (Miller et al., 1993; Zimmerman,

Bandura & Martínez-Pons, 1992). All this influences cognitive and metacognitive strategies which are put into play when approaching the tasks, as well as regulation of effort and persistence, which in turn affects academic achievement directly and positively (González-Pienda & Núñez, 1997; Núñez et al., 1998).

Models and theories of motivation which exist today not only highlight the cognitive determinants of motivation, but they also focus on the effects that certain contextual, personal variables have on cognitive and affective components of the motivational process.

Gender is one of the personal variables that have been related to differences found in motivational functioning and in self-regulated learning. Different research has demonstrated the existence of different attributional patterns in boys and girls, such that while girls tend to give more emphasis to effort when explaining their performance (Lightbody et al., 1996; Georgiou, 1999; Powers & Wagner, 1984), boys appeal more to ability and luck as causes of their academic achievement (Burgner & Hewstone, 1993). Different research has also pointed out that girls usually make external attributions for successes and failures, and that when they make internal attributions, these refer not so much to effort, but to ability (Wiegers & Friere, 1977; Postigo et al., 1999). However, boys usually attribute successes to stable internal causes such as ability, while failure is attributed to unstable external causes like luck or internal causes like effort, thus showing an attributional pattern which enables them to enhance their own image of themselves (Smith, Sinclair & Chapman, 2002).

As for the type of academic goals pursued by boys and girls, several studies have shown that boys show a greater degree of extrinsic motivational orientation (Anderman & Anderman, 1999; Midgley & Urdan, 1995; Roeser, Midgley & Urdan, 1996; Urdan et al., 1998), while girls show a greater intrinsic motivation (Meece & Holt, 1993; Nolen, 1988). However, other studies have not found differences in the type of goal pursued as a function of gender (Ryan & Pintrich, 1997).

Regarding gender differences in academic self-concept, there is no evidence of such differences existing (Gabelko, 1997; Amezcua & Pichardo, 2000), and when such differences do occur, it is to the detriment of the girls (Hilke & Conway, 1994).

Taking academic goals, academic self-concept, causal attributions and significant learning strategies as the backbone of this paper, our research objective consists of analyzing existing differences in these variables as a function of the students' gender.

Method

Subjects

The sample is composed of 521 students between the ages of 14 and 18, currently in the second cycle of mandatory secondary education at public or subsidized schools in the province of Jaen. Out of the whole sample, 285 were female and 236 were male. As for the "schoolyear" variable, 252 students were in 9th grade, and 269 were in 10th grade.

Variables and instruments

The target cognitive-motivational variables of this study are academic self-concept, extrinsic and intrinsic motivational orientations manifested by the students, the type of causal attributions that students make in academic success or failure situations, and significant learning strategies used by the students.

Evaluation of self-concept was carried out using the AFA questionnaire (Musitu, García & Gutiérrez, 1994), our research taking into account only scores obtained for the "Academic self-concept" factor in this questionnaire.

On the other hand, for determining intrinsic or extrinsic motivational orientation, we evaluated goals that students pursue in the school environment. For this purpose we looked at scores obtained by students in the second-order factors "Motivation for learning" and "Seeking positive competency judgments" from the "MAPE-II Questionnaire" elaborated by Montero and Alonso (1992), whose purpose is to evaluate motivational patterns demonstrated by students between the ages of 15 and 18 years.

As for causal attributions given by students in situations of success or failure, we considered scores obtained by students on six scales from the EMA-II Questionnaire (Alonso, Montero & Mateos, 1992), designed to evaluate the degree that students attribute their aca-

demographic successes and failures to internal factors such as effort and ability and to external factors like luck or aspects related to the teacher.

We also considered students' use of strategies directed at comprehension and significance of learning, these being measured from students' scores on scales for "Information Processing Strategies", "Self-evaluation strategies" and "Support strategies" from the LASSI (*Learning and Study Strategies Inventory*) by Weinstein (1987), as adapted by García (1998) for students in mandatory secondary education. Finally, students were asked to report their marks for Language/Literature and Mathematics subjects received in the trimester prior to completing the inventories. These marks were categorized in a range of scores from 1 to 5, 1 meaning insufficient, 2 passing, 3 satisfactory, 4 very good, and 5 excellent.

Statistical Analysis

In order to perform the statistical analysis, we used a series of analyses of differences between averages calculated with the Student "t" test. The purpose was to find possible differences between the participating girls and boys in causal attributions, academic self-concept, academic goals, use of significant learning strategies, and in performance. Data were analyzed using the statistical package Statistica 6.0, using 5% as a level of significance for establishing the existence of relationships or of significant differences.

Results

In general, results found for gender differences regarding variables under consideration, of a cognitive-motivational nature, indicate that significant differences exist between both groups in attributions of success and failure to random factors such as luck, and in attributions of failure to the teacher, to the lack of effort, and to low ability (see Table 1).

Table 1. Differences of averages in causal attributions for success and failure found in secondary school students ($p < .05$)

VARIABLE	GENDER	N	AVG	Sx	t	p
<i>Attribute failure to teacher</i>	Boy	236	48.72	30.81	-2.96	.0031 *
	Girl	285	40.76	30.18		

<i>Attribute failure to effort</i>	Boy	236	56.58	26.43	2.03	.0426 *
	Girl	285	61.40	27.39		
<i>Attribute success to effort</i>	Boy	236	65.03	30.13	1.94	.0527
	Girl	285	69.87	26.69		
<i>Attribute failure to ability</i>	Boy	236	61.16	28.31	2.12	.0336 *
	Girl	285	66.22	25.81		
<i>Attribute success to ability</i>	Boy	236	69.44	25.92	.05	.9527
	Girl	285	69.57	25.53		

Specifically, results indicate that female students attribute failure to internal factors such as ability and lack of effort to a greater extent than do males, who attribute it to external factors such as luck or the teacher. In addition, male students have a greater tendency to consider luck as the cause of good academic results (see Figures 1 and 2).

Figure 1: Boys' and girls' causal attributions for failure

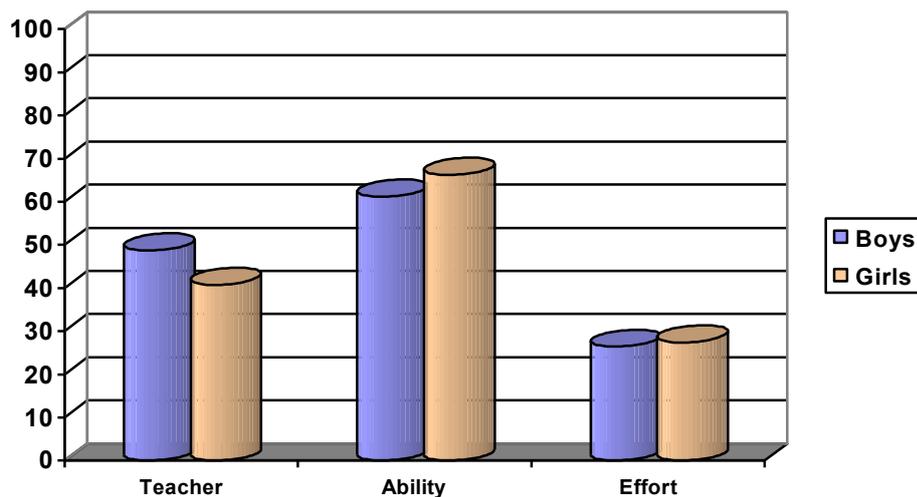
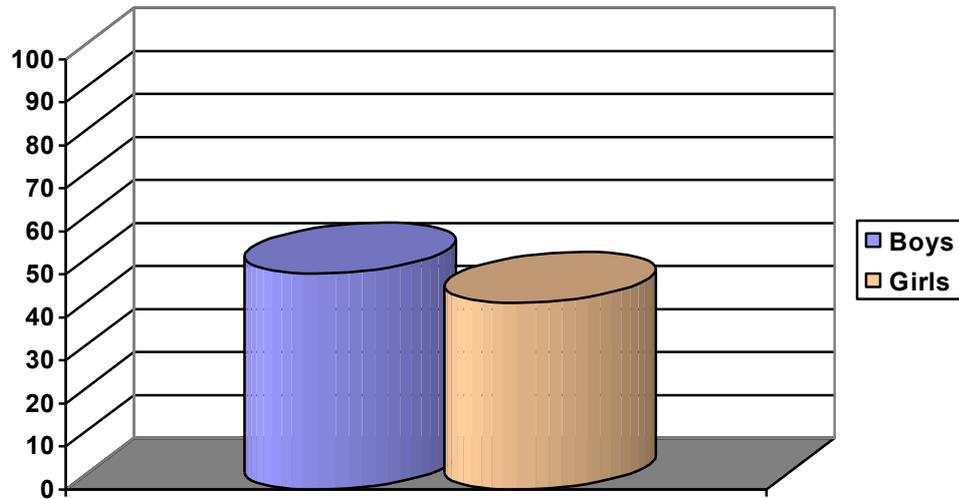
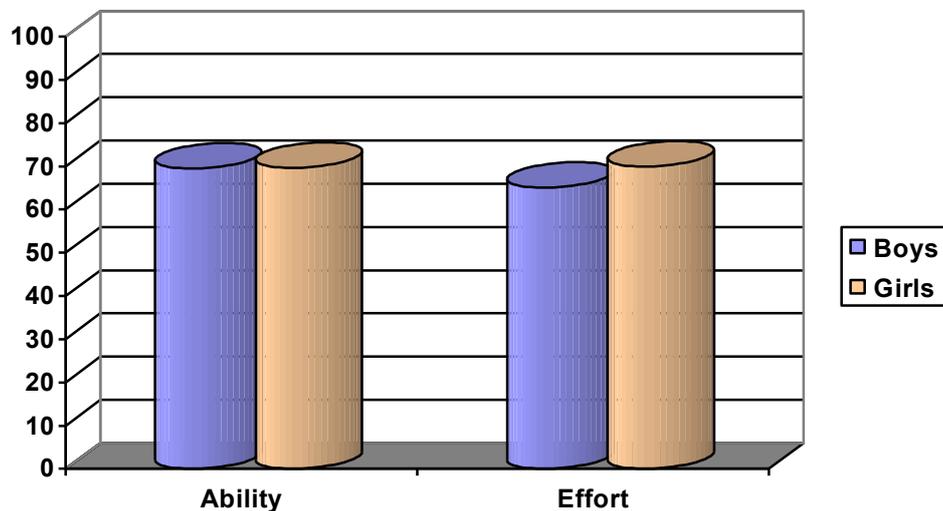


Figure 2: Boys' and girls' attributions to luck



However, both boys and girls equally attribute their successes to internal factors such as effort and ability, no significant differences between the two groups being found for these variables (see Figure 3).

Figure 3: Boys' and girls' causal attributions for success and failure



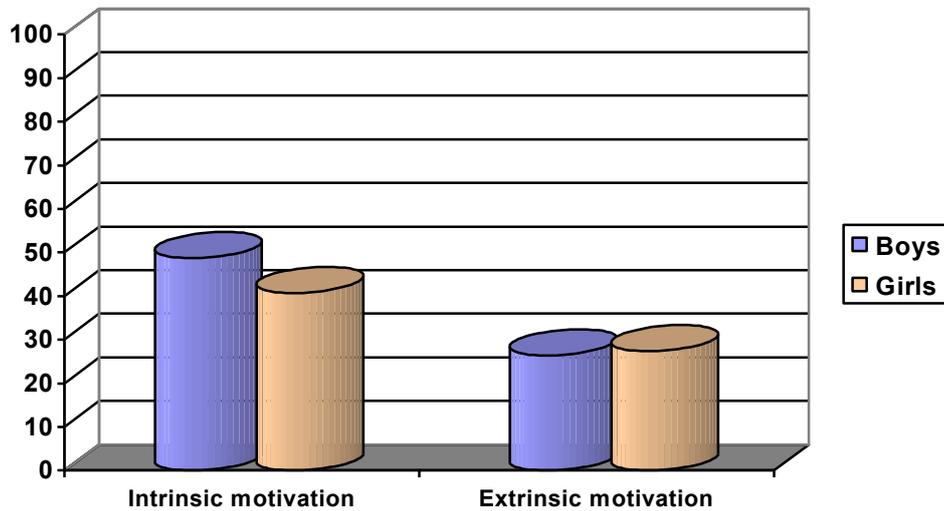
As for academic goals, we can also distinguish significant differences between male and female students (see Table 2 and Figure 4).

Table 2. Differences of averages in academic goals and in academic self-concept found in secondary school students ($p < .05$)

VARIABLE	GENDER	N	AVG	Sx	t	p
<i>Learning goals</i>	Boy	236	30.62	19.72	.48	.6253
	Girl	285	31.50	21.01		
<i>Seeking positive competency judgments</i>	Boy	235	47.02	29.76	- 2.24	.0249 *
	Girl	285	41.54	25.89		
<i>Academic self-concept</i>	Boy	235	75.04	24.68	1.14	.2527
	Girl	285	77.49	23.98		

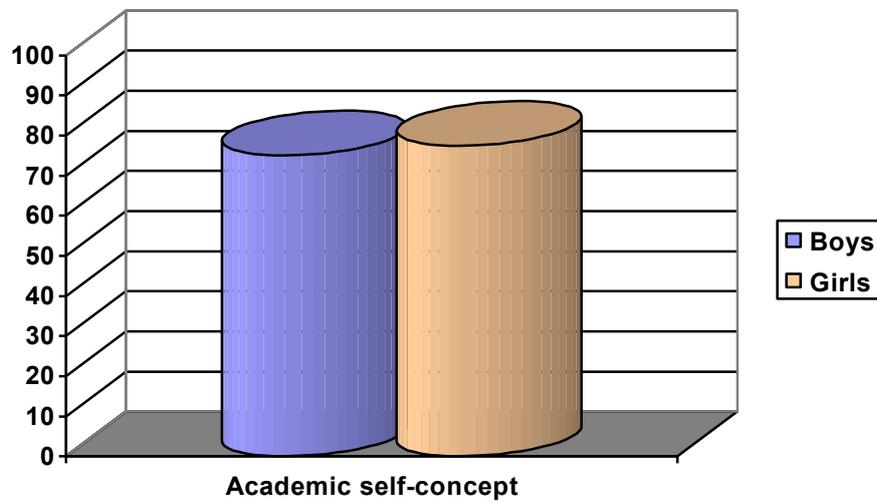
Specifically, it was found that male students show greater extrinsic motivation, tending more to seek positive competency judgments and to avoid negative judgments, when compared to female students. However, the two groups do not show significant differences in levels of intrinsic motivation.

Figure 4: Boys' and girls' mastery and extrinsic goal orientation



As for academic self-concept, results show very similar levels in both boys and girls, since the differences we found were not significant (see Table 2 and Figure 5).

Figure 5: Gender differences in academic self-concept

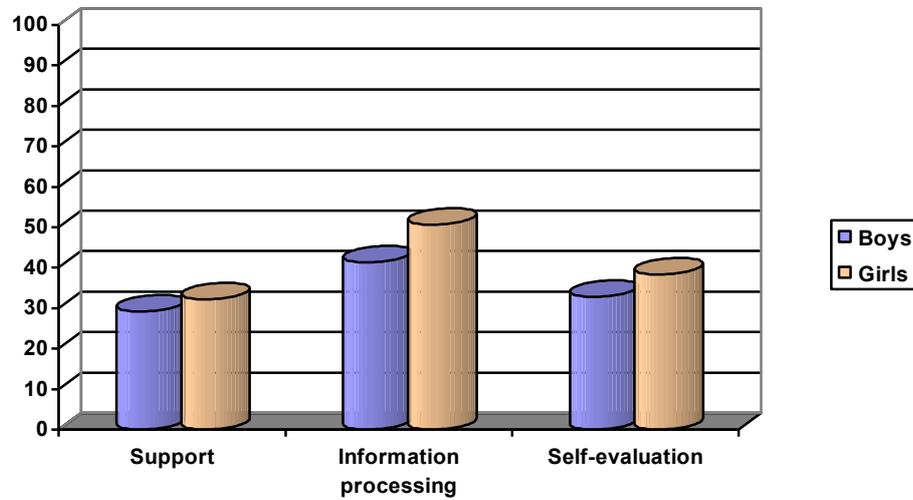


Regarding use of learning strategies, results do not show differences in boys' and girls' use of support strategies. However, differences were found as a function of gender in the use of information processing and self-evaluation strategies; female students make greater use of these learning strategies (see Table 3 and Figure 6).

Table 3. Differences of averages in use of significant learning strategies and in performance found in secondary school students ($p < .05$)

VARIABLE	GENDER	N	AVG	Sx	t	p
<i>Support strategies</i>	Boy	236	29.19	22.06	1.51	.1303
	Girl	284	32.21	23.03		
<i>Information processing strategies</i>	Boy	236	41.38	27.62	3.51	.0004 *
	Girl	284	50.58	31.29		
<i>Self-evaluation strategies</i>	Boy	236	32.86	23.42	2.53	.0114 *
	Girl	284	38.37	25.59		

Figure 6: Boys' and girls' use of learning strategies

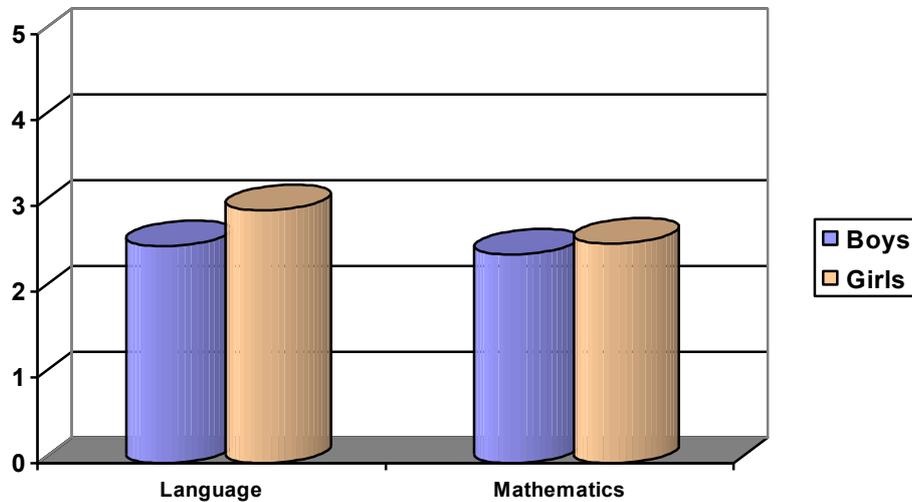


Finally, not only were differences found as a function of gender in motivation and use of learning strategies, but differences were also produced in performance attained in the subject of Language (see Table 4 and Figure 7).

Table 4. Differences of averages in performance found in secondary school students ($p < .05$)

VARIABLE	GENDER	N	AVG	Sx	t	p
<i>Performance in Language</i>	Boy	236	2.53	1.35	3.5162	.0004 *
	Girl	285	2.95	1.38		
<i>Performance in Mathematics</i>	Boy	336	2.43	1.36	1.07	.2849
	Girl	285	2.56	1.44		

To be specific, girl students obtained better marks in the subject of Language than their male counterparts. However, differences were not found in performance attained in the subject of Mathematics (see Table 4 and Figure 7).

Figure 7: Boys' and girls' performance in Language and Mathematics

Discussion

Results described above reflect the existence of differences between boys and girls both in attributing their academic results to different causal factors, as well as in the degree of extrinsic motivation shown. We find specifically that while male students show more external attributional patterns when faced with failure, female students tend to take more responsibility for bad academic results, attributing them to lack of effort or lack of ability, both of which are internal causal factors. In addition, male students give more credit to luck as a factor which is responsible for academic results. However, differences were not found in attributions made in success situations.

We also confirm that just as in several other studies (Anderman & Anderman, 1999; Midgley & Urdan, 1995; Roeser, Midgley & Urdan, 1996; Urdan et al., 1998), male students show greater extrinsic motivation than female students, while differences are not found in levels of intrinsic motivation (Patrick et al., 1999), nor in academic self-concept (Gabelko, 1997; Amezcua & Pichardo, 2000) as a function of gender.

These results would indicate, in agreement with Ryan, Hicks and Midgley (1997), that boys are usually more concerned than girls with having a positive image of themselves in

class, on which account they tend to seek positive competency judgments. In failure situations, their image of themselves might be damaged (Smith, Sinclair & Chapman, 2002), thus they attribute failures to causes like luck or the teacher, and not so much to internal factors like effort or ability. In addition, this ego-enhancing interest not only involves making external attributions, but also leads the student to approach the learning process in a superficial way, and to make little use of significant learning strategies (Valle et al., 1997). This research confirmed that this did occur in the group of boys. The study in fact reveals how boys use significant learning strategies to a lesser degree than do girls.

Finally, the fact that the girls take greater responsibility for their academic failures (being less concerned than the boys about looking good), together with their greater use of significant learning strategies, is associated with the girls' obtaining better results in the subject of Language. However, despite the girls showing a more adaptive cognitive-motivational pattern than the boys, the former do not obtain significantly higher marks in the subject of Mathematics.

In summary, results suggest that differences exist in the cognitive-motivational functioning of boys and girls in the academic environment. However, as indicated by Patrick et al. (1999) or Anderman and Midgley (1997), one aspect that may be influencing the relationship that exists between motivational orientation and student's gender is the type of academic discipline. Future research should take into account not only differences in performance in different subjects, but also differences that are produced as a function of gender in academic goals, causal attributions and strategies used in different disciplines. Furthermore, it would also be interesting to determine how other variables, such as boys' and girls' perceptions of their classes and their teachers, as well as differential treatment they might be receiving, might be influencing their motivational orientation.

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